



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/617,858 07/17/00 O REGAN

M UA0026 US NA

UNIAX CORPORATION  
C/O E I DU PONT DE NEMOURS AND COMPANY  
LEGAL PATENTS  
1007 MARKET STREET  
WILMINGTON DE 19898

MM71/1003

EXAMINER

LOUIE, W

ART UNIT

PAPER NUMBER

2814

DATE MAILED:

10/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**BEST AVAILABLE COPY**

**Office Action Summary**

Application No.

09/617,858

Applicant(s)

O REGAN ET AL.

Examiner

Wai-Sing Louie

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, line 2, it is not understood how can a work function of greater than 4 eV be called a low work function (see claim 1). For the purpose of examination, "smaller than" is assumed.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coldren et al. (US 5,877,038) in view of Leising et al. (US 6,117,529).

With regard to claim 1, Coldren et al. disclose a light-emitting device (col. 3, line 3 to col. 9, lines 3) comprising:

- An anode 18 comprising a semi-transparent layer having a high reflectivity, but do not disclose the anode is a high work function material. However, Leising et al

disclose the anode is made of high work function material (Leising col. 11, lines 21-25). Leising et al. teach an anode typically is made of high work function material (Leising col. 11, line 23-24). Hence, it would have been obvious to one with ordinary skill in the art to provide a high work function material for the anode to prevent a barrier being formed;

- A cathode 46 comprising a first cathode layer, but do not disclose the cathode is a low work function material. However, Leising et al. disclose a cathode is made from a low work function material (Leising col. 11, lines 11-14). Leising et al. teach that the cathode is typically made of low work function material (Leising col. 11, lines 13-14). Hence, it would have been obvious at the time the invention was made to the cathode with low work function material in Coldren's device in order to make the device functioning properly. Leising et al. disclose the low work function material is a metal or its alloy (Leising col. 11, line 19). Coldren et al. disclose the second layer 16 has a high reflectivity (col. 7, lines 25-27).

With regard to claim 2, Coldren et al. modified by Leising et al. in claim 1 above would have a semi-transparent layer (anode) has a work function of greater than 4 eV (Leising col. 11, line 24).

With regard to claim 3, Coldren et al. modified by Leising et al. in claim 1 above would have the semi-transparent layer includes an anode material selected from a metal (Leising col. 11, line 25).

With regard to claim 4, Coldren et al. modified by Leising et al. in claim 1 above would have the second cathode layer has a work function of smaller than 4 eV (Leising col. 11, line 14).

With regard to claim 5, Coldren et al. modified by Leising et al. in claim 1 above would have the second cathode material selected from a metal and metal alloys (Leising col. 11, line 19).

With regard to claims 12 and 13, Coldren et al. disclose the semi-transparent layer comprises a metal backing layer (col. 3, line 54), but do not disclose the metal layer is silver. However, Leising et al. disclose a cathode layer is made of silver (Leising col. 11, line 19). Hence, it would have been obvious to one with ordinary skill in the art to provide a silver layer in Coldren's device in order to have a high reflectivity.

With regard to claim 18, Coldren et al. do not disclose an air-stable metal-coated layer on a silver layer. However, Leising et al. disclose a highly transparent protective layer 25 (Leising col. 17, line 47). Therefore, it would have been obvious to one with ordinary skill in the art to apply a protective layer on the silver layer in order to prevent oxidation of the metal.

With regard to claim 19, Coldren et al. disclose:

- The semi-transparent layer 46 has a first surface adjacent to the cathode and an opposite second surface (cover figure);
- Coldren et al. do not disclose a passivation layer which is made of material selected from polyaniline, polyaniline blends, polythiophene, and polythiophene blends. However, Leising et al. disclose a degenerate semiconductor layer made of doped polyaniline (Leising col. 11, line 30). Hence, it would have been obvious to one with ordinary skill in the art to have a passivation layer in Coldren's device in order to protect the anode.

With regard to claims 20-23, Coldren et al. and Leising et al. do not disclose the thickness of the semi-transparent layer. However, it is obvious to choose the correct thickness to enhance the reflectivity indices of the layer.

With regard to claim 24, in addition to the limitations in claim 19 above, Coldren et al. also disclose:

- A transparent layer of indium tin oxide (ITO) is adjacent to the semi-transparent layer (col. 6, line 30).

Claims 6-11 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coldren et al. (US 5,877,038) modified by Leising et al. (US 6,117,529) as applied to claim 1 above, and further in view of Najda (US 6,137,819).

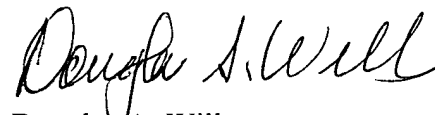
With regard to claims 6 to 11, Coldren et al. disclose the semi-transparent layer has a high reflectivity (col. 7, line 26), but do not disclose how high is the reflectivity at the wavelength of emission. Leising et al. disclose a reflectivity in the spectral range is greater than 85% (Leising col. 14, lines 60-62). However, Najda discloses that a 99.9% reflectivity can be achieved (Najda col. 6, lines 49-56). Thus, it would have been obvious to one with ordinary skill in the art would provide a high reflectivity layer in Coldren's device to improve the efficiency of the device.

With regard to claims 14-17, Coldren et al. modified by Najda in claims 6-11 above would have the second cathode layer having high reflectivity of 99.9%.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (703) 305-0474. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Douglas A. Wille  
Patent Examiner

  
wsl  
October 1, 2001